RIGHT PARADUODENAL HERNIA

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RIGHT PARADUODENAL HERNIA is a rare surgical condition. Only two patients with this condition have been seen at the Lahey Clinic from 1925 to 1944. This incidence corresponds with that stated in the literature. From 1910 to 1939 there were two cases of right paraduodenal hernia treated surgically at the Mayo Clinic.[5] The ratio of right paraduodenal hernia to left paraduodenal hernia is 1 to 3. In 1941, Cogswell and Thomas[3] found a total of 48 cases of right paraduodenal hernia reported in the literature. Operation was performed in 29 of these 48 cases, with recovery in 16 cases. Thus, the mortality has been almost 50 per cent, and probably is higher when we consider that only the cases in which operation was successful are likely to be reported. We are adding two cases in which operation was performed, with recovery, to the total of 16 cases.

Right paraduodenal hernia was defined by Moynihan[7] as having the following characteristics: (1) Almost all of the small intestine is imprisoned in a peritoneal sac behind the ascending and transverse mesocolon and occupies the right half of the abdomen; (2) the opening of the sac is to the left and near the duodenojejunal juncture at the ligament of Treitz; and (3) the superior mesenteric artery or a continuation of it, the ileocolic artery, lies in the anterior portion of the sac. It is for this reason that the surgical correction of this hernia often presents technical difficulties because the vascular supply to the small bowel may be impaired. This hernia is also called internal hernia, retroperitoneal hernia, and intraperitoneal hernia.

Andrews[1] stated that right paraduodenal hernia is the result of malrotation of the ascending colon and cecum. An excellent description with explanatory diagrams of normal and abnormal rotation of the cecum causing right paraduodenal hernia is given by Cogswell and Thomas and will therefore not be repeated.

CASE REPORTS

Case 1.—A white male, aged 47 years, was first seen at the Lahey Clinic on December 6, 1943. The chief complaint was intermittent episodes of diarrhea for 15 years, recurring about once or twice a year. The attacks lasted three days, with associated fever and chills. There was no nausea or vomiting. The stools were light in color and did not contain blood. The episodes of diarrhea increased in frequency until 1940 when he started drinking a quart of buttermilk a day; the periods of diarrhea stopped for two years. In 1942 they reappeared, with a feeling of heaviness in the abdomen. During the past year diarrhea recurred at three week intervals, lasted three days and usually followed a train ride. The diarrhea was so severe that he had

almost continuous stools for hours. The episodes were not related to the ingestion of any special food or to the time of eating. The onset was always sudden and accompanied by fever. He took vitamin B-complex for three months which improved the diarrhea, but chills and fever without pain or abdominal cramps still occurred. There was almost continual gnawing, hunger-like distress in the midepigastrium, unrelieved by eating. No weight loss was admitted. Roentgenograms had not been taken. Four years before coming to the Clinic his stools were examined for parasites, and were negative. The past history and family history were essentially negative.

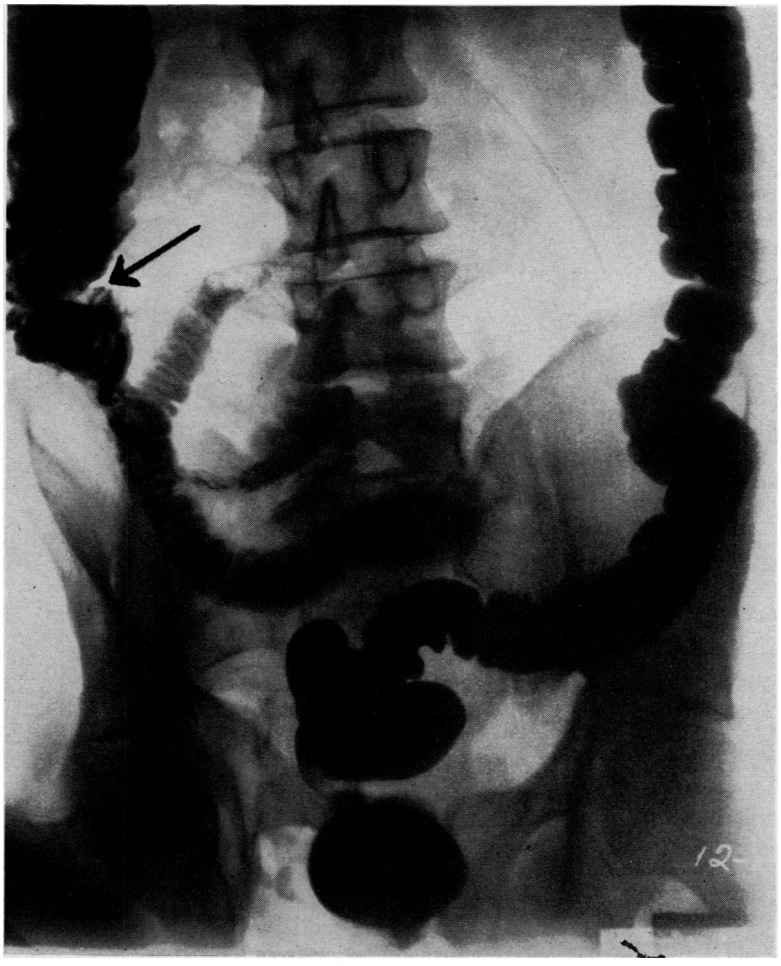

FIG. 1.—Case 1: Barium enema showing the cecum not filling out well, being concave on the medial side.

On physical examination the patient was moderately obese, weighing 214 pounds. The significant observations were limited to the abdomen which showed tenderness in the right and left lower quadrants.

The patient was admitted to the hospital for study. The gastro-enterologic roentgenograms of the esophagus, stomach, duodenum and small intestine were reported to be normal. The barium enema revealed that the cecum did not fill-out well (Fig. 1), being concave on the medial side. An air contrast enema showed that the entire colon was

distended with air, but the cecum did not distend to a rounded contour on its medial surface. Gastric analyses and roentgenograms of the gallbladder were normal.

Because of the questionable defect in the cecum an exploratory celiotomy was performed under spinal anesthesia by one of us (F. H. L.) on December 17, 1943. A hernia was found which originated in the right paraduodenal fossa through a defect beneath the root of the jejunal mesentery (Fig. 2). Through this defect all the small bowel had herniated and was completely encased in the hernial sac of peritoneum of the

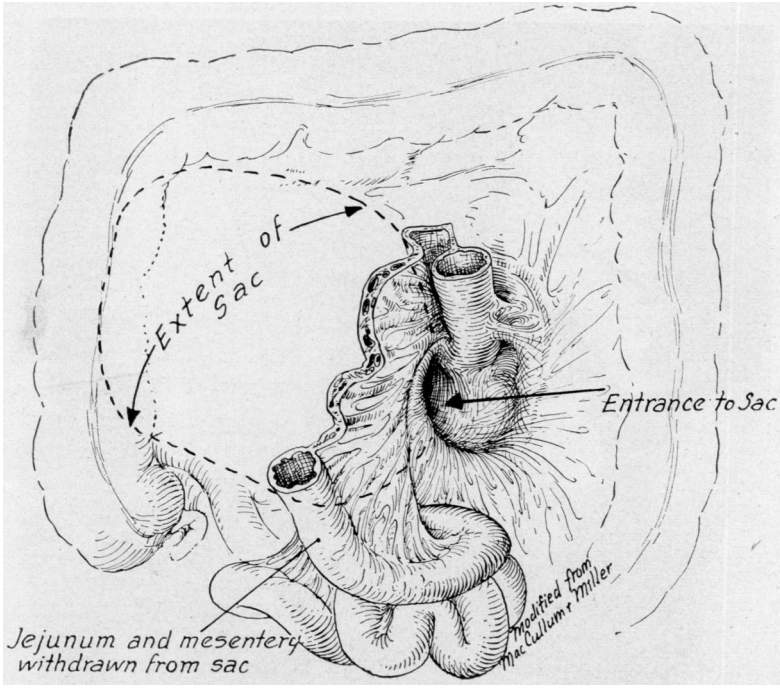

FIG. 2.—Entrance to hernial sac near ligament of Treitz and extent of hernial sac behind mesocolon of ascending colon.

proximal jejunal mesentery and the peritoneum of the ascending and transverse mesocolon (Fig. 3). There was no obstruction of the bowel. There was some angulation at the ileocecal area with some thickening of the terminal ileum as it emerged from the hernial sac to enter the cecum normally. An opening was made in an avascular area of the mesocolon of the ascending colon. Beneath this the hernial sac of the mesentery of the proximal jejunum was incised in an avascular area. The small bowel was freed from it, and the sac traced down to its root at the jejunal fossa where the large defect was found in the mesentery of the jejunum entering from the left. The sac was carefully dissected off the jejunum and the third portion of the duodenum. The neck of the sac was closed with atraumatic chromic catgut, and the redundant portion of the sac was excised (Fig. 4). The intestines were pulled back into the greater peritoneal cavity in their normal position. The peritoneum of the ascending colon was closed with atraumatic sutures, thus peritonealizing the posterior abdominal wall on the right side.

The postoperative course was uneventful, and the patient made an excellent recovery. He was discharged on the 18th postoperative day.

A letter from the patient, dated March 3, 1944, stated that he was "not able thus far to find the slightest trace of the old symptoms."

Case 2.—A 17-year-old white girl was first seen at the Lahey Clinic on April 21, 1944, with the chief complaint of acute attacks of abdominal pain since birth. The attacks of pain occurred in the upper abdomen, and were followed by nausea and vomiting. The vomiting eventually brought relief. The pain was well localized and did not radiate, was severe, but did not require morphine. There was no back pain. Between attacks, digestion and function of the bowel were normal.

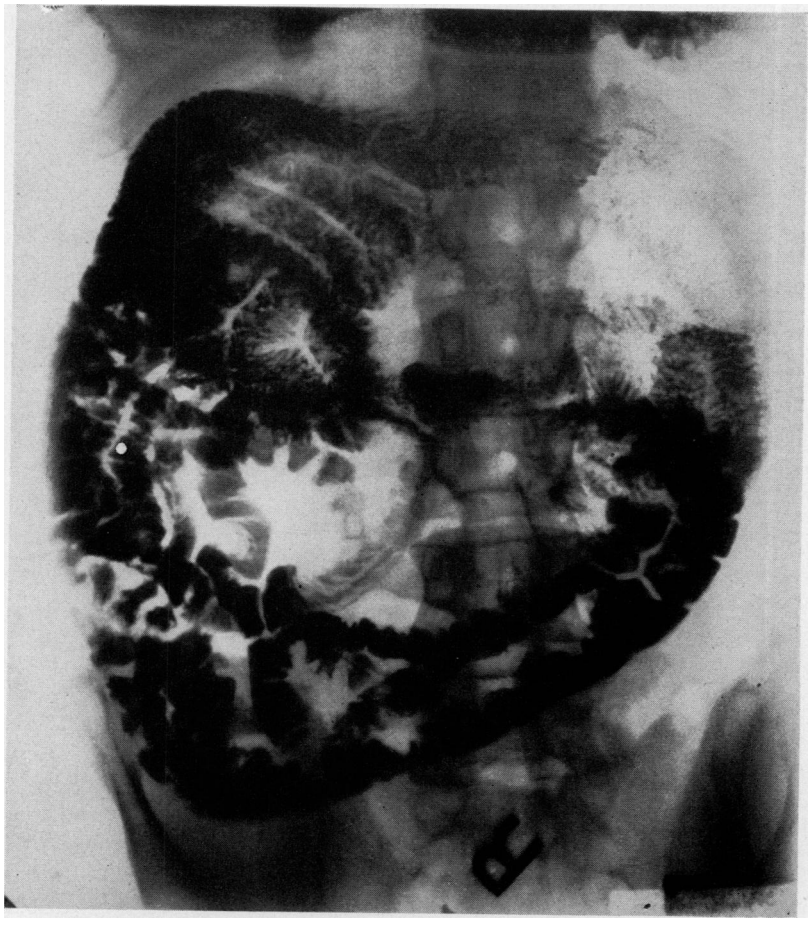

FIG. 3.—Case 1: Appearance of the small intestine as though contained in a spherical transparent paper bag.

Physical examination gave essentially negative results. The gastric analysis showed free acid of 45, total acid of 76, and occult blood, 0. On April 25, 1944, a roentgenogram of the esophagus, stomach, and duodenum was considered normal. On May 28, 1944, a second roentgenogram of the duodenum was considered to show malformation of this structure. A third roentgenogram taken on June 14, 1944, was interpreted as showing redundancy of the duodenal loop and absence of the usual ascending loop of duodenum to the duodenojejunal angle (Fig. 5). The jejunum was largely on the right side of the abdomen. The jejunal mucosal pattern was normal. A barium enema (Fig. 6) and roentgenogram of the gallbladder were normal.

Because of the recurring attacks of pain and the abnormal roentgenologic findings,

an exploratory celiotomy was performed on October 31, 1944, by one of us (F. H. L.). A herniation of the proximal portion of the jejunum through the mesentery of the jejunum at the ligament of Treitz was found. Approximately two feet of the jejunum had herniated through the right paraduodenal fossa. There was angulation of the jejunum at the ligament of Treitz. The hernial mass had partially raised the peritoneum of the right upper posterior abdominal wall medial and inferior to the hepatic flexure of the colon. The jejunum was pulled out of the hernial sac. The angulation of jejunum was then straightened by sharp and blunt dissection. The opening of the hernial sac was sutured withfl fine interrupted silk sutures. A small portion of the jejunum was then buttressed against the opening with interrupted silk sutures (Fig. 4).

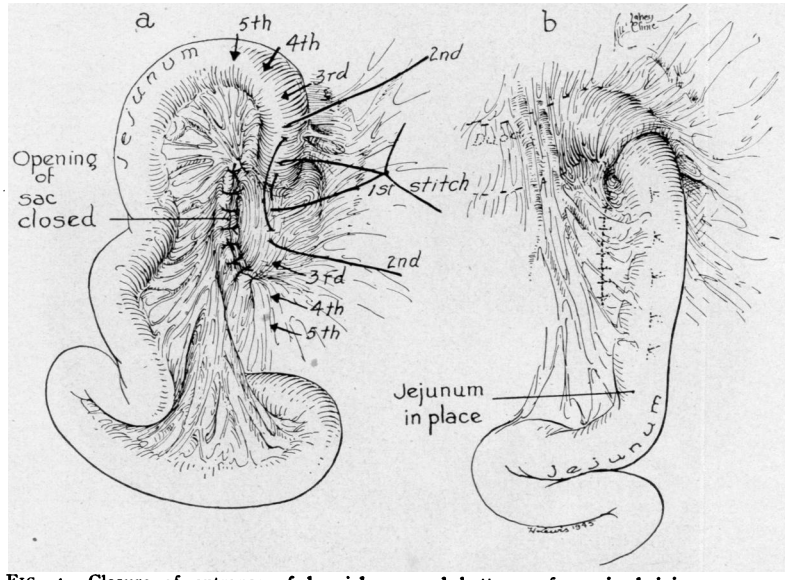

FIG. 4.—Closure of entrance of hernial sac and buttress of proximal jejunum over this closure.

The patient's convalescence was uneventful until the 12th postoperative day, when she had an attack of abdominal pain with considerable vomiting. Wangensteen suction was instituted and intravenous fluids were administered. The following day, November 14, 1944, a partial gastro-intestinal roentgenographic series was made which was reported as follows: Films taken at hourly intervals for six hours showed only a small amount of barium in the loops of small bowel at one hour. At the two-hour examination, barium was scattered through the loops of small bowel, with the head of the meal in the cecum. At six hours there was a large gastric residue, with the duodenal loop also visualized and appearing dilated. The interpretation was marked pylorospasm and dilatation of the duodenal loop.

Following this complication, the postoperative course was without incident, and the patient was discharged four days later, on the 17th postoperative day.

COMMENT.—In reviewing the preoperative roentgenograms (Figs. 3 and 5), it is of particular interest that in Case 1 (Fig. 3) the correct diagnosis might have been made because of the following differential points, as described by Exner[4]: (1) The appearance of the small intestines, as though they were contained in a spherical transparent paper bag from which restricted position

it is usually impossible to disturb the intestinal coils by manual palpation or postural change; (2) the location of the small intestines well above the true pelvis. Normally, the ileum gravitates and lies in the rectovesical pouch. The concavity visible on the medial aspect of the cecum in the preoperative barium enema is now interpreted as being caused by extrinsic pressure on the cecum from the overlying hernial sac (Fig. 1).

FIG. 5.—Case 2: Roentgenogram showing (1) abnormal location of the jejunum on the right side of the abdomen (2) downward continuation of the jejunum from the second portion of the duodenum; and (3) absence of the transverse third and ascending fourth portions of the duodenum traveling to the left across the spine.

In Case 2, the following positive roentgenographic findings diagnostic of right paraduodenal hernia are well illustrated (Fig. 5) and should have led to the suspicion of a right paraduodenal hernia: (1) The abnormal location of the jejunum on the right side of the abdomen; (2) the downward continuation of the jejunum from the second portion of the duodenum; (3) the absence of the transverse third and ascending fourth portions of the duodenum traveling to the left across the spine; and (4) the dilatation of the duodenum as a result of constriction or angulation of the proximal part of the jejunum by the neck of the peritoneal sac, thus causing the symptoms of high intestinal

obstruction, with relief by vomiting. These differential points were emphasized by Case and Upson.[2]

The two cases reported here are very similar to the case reported by McCarty and Present[6] in that there was no evidence of malrotation of the cecum (Figs. 1 and 6), and is explained on the same basis as in their case. It is supposed that one or more loops of small intestine were caught at an

FIG. 6.—Case 2: No evidence can be seen of malrotation of the cecum in this barium enema.

early embryologic stage in a pouch formed by the extraordinarily long mesentery of the proximal jejunum (Fig. 7). As the length and size of the small intestine increased, the hernia increased.

Since right paraduodenal hernia is most commonly found incidental to operation performed for another surgical condition or as the result of an exploration, it is important in every patient with unexplained and persistent abdominal symptoms that the region of the ligament of Treitz be included in general exploration with the possibility of the undiagnosed

existence of such a hernia. Most of these herniae are symptomless for a long time, but if found and reducible, the small intestine should be pulled back into the general abdominal cavity and the aperture left behind, obliterated and buttressed over by the adjacent loop of jejunum to reinforce it (Fig. 4).

The most common presenting symptom of this condition is a varying degree of intestinal obstruction, either partial or complete. Having in mind

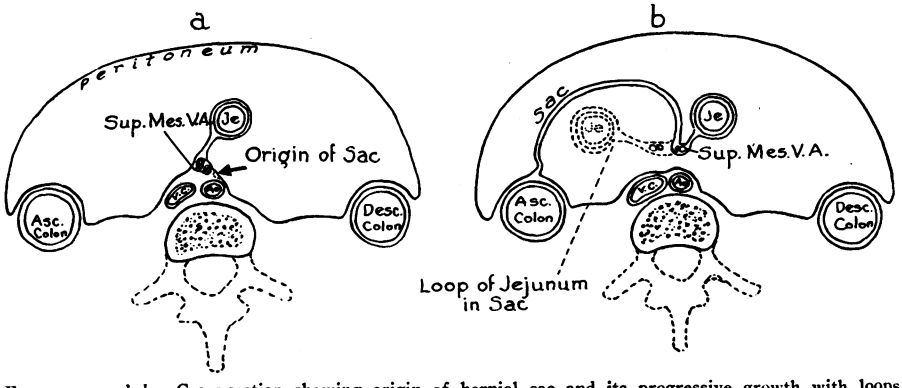

FIG. 7., *a* and *b*.—Cross-section showing origin of hernial sac and its progressive growth with loops of small intestine contained within the growing sac.

the diagnostic roentgenographic features, as described by Exner, and which are present in this series, a preoperative diagnosis, at least in such cases as ours, should be reasonably possible.

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